

PATENT CLAIMS

1. Relative pressure sensor for measuring a pressure difference between a pressure being measured and the ambient atmospheric pressure, comprising

a platform (10) and a measuring membrane (11) loadable with a pressure being measured, wherein the measuring membrane is secured at its edge to the platform, wherein a pressure chamber is formed between the platform and the measuring membrane, wherein the pressure chamber communicates over a reference air path with the atmosphere, characterized in that the reference air path includes a winding path (20).

2. Relative pressure sensor as claimed in claim 1, wherein the winding path (20) lies essentially in a plane.

3. Relative pressure sensor as claimed in claim 2, wherein the plane extends parallel to the plane of the measuring membrane (11).

4. Relative pressure sensor as claimed in one of the claims 1 to 3, wherein the length of the projection of the winding path (20) onto the plane of the membrane (11) amounts to at least 50%, preferably at least 65%, and especially preferably at least 80% of the total length of the winding path.

5. Relative pressure sensor as claimed in one of the claims 1 to 4, wherein the length of the winding path (20) amounts preferably to at least 75%, more preferably to at least 100% and especially preferably to 150%, of the length of the perimeter of the measuring membrane (11).

6. Relative pressure sensor as claimed in one of the preceding claims, wherein the length of the winding path (20) is at least twice as long as the separation of the atmosphere-side opening (31) of the winding path from the plane of the measuring membrane (11).

7. Relative pressure sensor as claimed in one of the claims 1 to 6, wherein the winding path includes a line-shaped depression (20) in a surface of a component (2) of the relative pressure sensor.

8. Relative pressure sensor as claimed in one of the claims 1 to 6, wherein the winding path includes a winding canal, which extends in at least one component of the relative pressure sensor between two openings in surface sections of the component.

9. Relative pressure sensor as claimed in one of the claims 1 to 4, wherein the winding path has a cross sectional area of less than 2 mm², preferably less than 1 mm² and especially preferably in the range of 0.7 to 0.4 mm².

10. Relative pressure sensor as claimed in one of the preceding claims, wherein the separation of the plane of the winding path from the plane of the measuring membrane is preferably smaller than the length of the winding path, especially preferably less than 75% of the length of the winding path and very specially preferably less than 50% of the length of the winding path.

11. Relative pressure sensor as claimed in one of the preceding claims, wherein the winding path is in thermal contact with the platform-side wall of the pressure chamber such that any cross section extending parallel to the separating membrane between any point of the winding path and the platform-side wall of the pressure chamber has a surface area fraction of heat conducting material amounting to at least 10%, preferably at least 25% and especially preferably at least 50%, of the membrane surface area.

12. Relative pressure sensor as claimed in one of the preceding claims, wherein the reference air path has a filter element (4) at its atmosphere-side inlet opening (31), for preventing the incursion of condensate into the reference air path.

13. Relative pressure sensor as claimed in claim 12, wherein the filter element (4) is in thermal contact with the winding path (20).

14. Relative pressure sensor as claimed in claim 12,

wherein the filter element (4) is hydrophobic or treated to be hydrophobic.

15. Relative pressure sensor as claimed in one of the claims 12 to 14, wherein the filter element (4) comprises a ceramic, metallic or organic material.

16. Relative pressure sensor as claimed in one of the preceding claims, wherein the winding path (4) is arranged in a first component (2), which is secured to the platform (10) and forms a chamber.

17. Relative pressure sensor as claimed in claim 16, wherein the chamber is hermetically sealed from its environment, and wherein additionally, at least one electronic component is arranged in the chamber.

18. Relative pressure sensor as claimed in one of the preceding claims, wherein the winding path extends spirally or helically.